

SEQUENCE LISTING

(1) GENERAL INFORMATION:

(i) APPLICANT: SEIDEL, Christoph
WEINHUES-THELEN, Ursula-Henrike
SCHMITT, Urban
JUNG, Günther-Gerhard
IHLENFELDT, HANS-Georg
KRAAS, Wolfgang

(ii) TITLE OF INVENTION: Method for serological typing using
type-specific antigens

(iii) NUMBER OF SEQUENCES: 46

(iv) CORRESPONDENCE ADDRESS:

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(E) COUNTRY: U.S.A.
(F) ZIP: 20005-5701

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: Floppy disk
(B) COMPUTER: IBM PC compatible
(C) OPERATING SYSTEM: PC-DOS/MS-DOS
(D) SOFTWARE: PatentIn Release #1.0, Version #1.30

(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER: unknown
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(C) CLASSIFICATION:

(vii) PRIOR APPLICATION DATA:

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(B) FILING DATE: 09-FEB-1996

(viii) PRIOR APPLICATION DATA:

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(B) FILING DATE: 09-FEB-1995

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(viii) ATTORNEY/AGENT INFORMATION:

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(ix) TELECOMMUNICATION INFORMATION:

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(2) INFORMATION FOR SEQ ID NO: 1:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 31 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:

Glu	Thr	His	Val	Thr	Gly	Gly	Ser	Ala	Gly	His	Thr	Val	Ser	Gly	Phe
1				5					10					15	
Val	Ser	Leu	Leu	Ala	Pro	Gly	Ala	Lys	Gln	Asn	Val	Gln	Leu	Ile	
			20					25					30		

(2) INFORMATION FOR SEQ ID NO: 2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 31 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:

Glu Thr His Val Thr Gly Gly Asn Ala Gly Arg Thr Thr Ala Gly Leu
 1 5 10 15

Val Gly Leu Leu Thr Pro Gly Ala Lys Gln Asn Ile Gln Leu Ile
 20 25 30

(2) INFORMATION FOR SEQ ID NO: 3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 31 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:

His Thr Arg Val Thr Gly Gly Val Gln Gly His Val Thr Ser Thr Leu
 1 5 10 15

Thr Ser Leu Phe Arg Pro Gly Ala Ser Gln Lys Ile Gln Leu Val
 20 25 30

(2) INFORMATION FOR SEQ ID NO: 4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 31 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:

His	Thr	His	Val	Thr	Gly	Gly	Arg	Val	Ala	Ser	Ser	Thr	Gln	Ser	Leu
1				5					10					15	
Val	Ser	Trp	Leu	Ser	Gln	Gly	Pro	Ser	Gln	Lys	Ile	Gln	Leu	Val	
			20					25					30		

(2) INFORMATION FOR SEQ ID NO: 5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 31 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:

Asp	Thr	His	Val	Thr	Gly	Gly	Ala	Gln	Ala	Lys	Thr	Thr	Asn	Arg	Leu
1				5					10					15	
Val	Ser	Met	Phe	Ala	Ser	Gly	Pro	Ser	Gln	Lys	Ile	Gln	Leu	Ile	
			20					25					30		

(2) INFORMATION FOR SEQ ID NO: 6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 31 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:

Glu	Thr	His	Val	Thr	Gly	Gly	Ser	Ala	Gly	His	Thr	Val	Ser	Gly	Phe
1				5					10					15	
Val	Ser	Leu	Leu	Ala	Pro	Gly	Ala	Lys	Gln	Asn	Val	Gln	Leu	Ile	
			20					25					30		

(2) INFORMATION FOR SEQ ID NO: 7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 31 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:

Gln	Thr	His	Thr	Val	Gly	Gly	Ser	Thr	Ala	His	Asn	Ala	Arg	Thr	Leu
1				5					10					15	
Thr	Gly	Met	Phe	Ser	Leu	Gly	Ala	Arg	Gln	Lys	Ile	Gln	Leu	Ile	
			20					25					30		

(2) INFORMATION FOR SEQ ID NO: 8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 31 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:

Thr Thr Tyr Ser Ser Gly Gln Glu Ala Gly Arg Thr Val Ala Gly Phe
 1 5 10 15

Ala Gly Leu Phe Thr Thr Gly Ala Lys Gln Asn Leu Tyr Leu Ile
 20 25 30

(2) INFORMATION FOR SEQ ID NO: 9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 31 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 9:

Ser Thr Gln Val Thr Gly Gly Gln Ala Ala His Thr Val Arg Gly Val
 1 5 10 15

Ala Ser Ile Phe Ser Pro Gly Ser Arg Gln Asp Ile Ser Leu Ile
 20 25 30

(2) INFORMATION FOR SEQ ID NO: 10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 31 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 10:

Ser Thr Ile Val Ser Gly Gly Thr Val Ala Arg Thr Thr His Ser Leu
 1 5 10 15

Ala Ser Leu Phe Thr Gln Gly Ala Ser Gln Lys Ile Gln Leu Ile
 20 25 30

(2) INFORMATION FOR SEQ ID NO: 11:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 22 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 11:

Thr Ala Ser Arg Gln Ala Glu Val Ile Ala Pro Ala Val Gln Thr Asn
 1 5 10 15

Trp Gln Lys Leu Glu Thr
 20

(2) INFORMATION FOR SEQ ID NO: 12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 22 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

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Thr Ala Ser Arg His Ala Glu Val Ile Thr Pro Ala Val Gln Thr Asn
1 5 10 15

Trp Gln Lys Leu Glu Val
 20

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 22 amino acids
 (B) TYPE: amino acid
 (C) STRANDEDNESS:
 (D) TOPOLOGY: linear

(vi) ORIGINAL SOURCE:
(A) ORGANISM: Hepatitis C Virus

Thr Ala Thr Lys Gln Ala Glu Ala Ala Ala Pro Val Val Glu Ser Lys
1 5 10 15

Trp Arg Ala Leu Glu Val
 20

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 22 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

(vi) ORIGINAL SOURCE:
(A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 14:

Gln Ala Ser Lys Gln Ala Gln Asp Ile Gln Pro Ala Val Gln Ala Ser
 1 5 10 15

Trp Pro Lys Val Glu Gln
 20

(2) INFORMATION FOR SEQ ID NO: 15:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 22 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 15:

Gln Ala Thr Arg Gln Ala Gln Asp Ile Gln Pro Ala Ile Gln Ser Ser
 1 5 10 15

Trp Pro Lys Leu Glu Gln
 20

(2) INFORMATION FOR SEQ ID NO: 16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 22 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 16:

Thr Ala Thr Lys Gln Ala Glu Ala Ala Pro Val Val Glu Ser Lys
 1 5 10 15

Trp Arg Thr Leu Glu Ala
 20

(2) INFORMATION FOR SEQ ID NO: 17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 17:

Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala Asn Leu Leu
 1 5 10 15

Trp Arg Gln Glu
 20

(2) INFORMATION FOR SEQ ID NO: 18:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

mf

Thr His His Asp Ser Pro Asp Ala Asp Leu Ile Glu Ala Asn Leu Leu
1 5 10 15
Trp Arg Gln Glu
20

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

(vi) ORIGINAL SOURCE:
(A) ORGANISM: Hepatitis C Virus

Thr His His Val Ser Pro Asp Ala Asp Leu Ile Glu Ala Asn Leu Leu
1 5 10 . 15

Trp Arg Gln Glu
20

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 16 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(vi) ORIGINAL SOURCE:
(A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 20:

Thr	His	Gly	Lys	Ala	Tyr	Asp	Val	Asp	Met	Val	Asp	Ala	Asn	Leu	Phe
1				5					10					15	

(2) INFORMATION FOR SEQ ID NO: 21:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 16 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS:
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

- (vi) ORIGINAL SOURCE:
- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 21:

Thr	His	Lys	Thr	Ala	Tyr	Asp	Cys	Asp	Met	Val	Asp	Ala	Asn	Leu	Phe
1				5					10					15	

(2) INFORMATION FOR SEQ ID NO: 22:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 20 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS:
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

- (vi) ORIGINAL SOURCE:
- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 22:

Thr	Arg	His	Thr	Pro	Pro	Asp	Ala	Asp	Leu	Ile	Glu	Ala	Asn	Leu	Leu
1				5					10					15	

Trp Arg Gln Glu

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(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 23:

Pro Glu Gln Val Glu Leu Gln Pro Pro Pro Gln Gly Gly Val Val Thr
1 5 10 15

Pro Gly

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS:
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 24:

Phe Glu Pro Val Gly Ser Ala Pro Pro Ser Glu Gly Glu Cys Glu Val
1 5 10 15

Ile Asp

(2) INFORMATION FOR SEQ ID NO: 25:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 25:

Ala Glu Leu Ala Thr Arg Ser Phe Gly
1 5

(2) INFORMATION FOR SEQ ID NO: 26:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 26:

Ala Glu Leu Ala Thr Lys Ser Phe Gly
1 5

(2) INFORMATION FOR SEQ ID NO: 27:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

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(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 27:

Ala Glu Leu Ala Thr Lys Thr Phe Gly
1 5

(2) INFORMATION FOR SEQ ID NO: 28:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 28:

Gln Gln Leu Ala Ile Lys Ser Phe Gly Gln Pro Pro Pro
1 5 10

(2) INFORMATION FOR SEQ ID NO: 29:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis C Virus

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 29:

Arg Glu Met Ala Asp Lys Val Leu Ser Pro Leu Gln Asp
 1 5 10

(2) INFORMATION FOR SEQ ID NO: 30:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis C Virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 30:

Ala Glu Leu Ala Thr Lys Thr Phe Gly
 1 5

(2) INFORMATION FOR SEQ ID NO: 31:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "A biotin group is attached to Pro of position 1."

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 18

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(D) OTHER INFORMATION: /note= "A NH₂ group is attached to Tyr at position 18."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 31:

Pro Ile Pro Lys Ala Arg Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro
1 5 10 15

Gly Tyr

(2) INFORMATION FOR-SEQ ID NO: 32:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "A biotin group is attached to Pro of position 1."

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 18
- (D) OTHER INFORMATION: /note= "A NH₂ group is attached to Tyr at position 18."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 32:

Pro Ile Pro Lys Asp Arg Arg Ser Thr Gly Lys Ser Trp Gly Lys Pro
1 5 10 15

Gly Tyr

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(2) INFORMATION FOR SEQ ID NO: 33:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "A biotin group is attached to Ala of position 1."

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 21
- (D) OTHER INFORMATION: /note= "A NH₂ group is attached to Gly at position 21."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 33:

Ala	Thr	Arg	Asp	Gly	Lys	Leu	Pro	Ala	Thr	Gln	Leu	Arg	Arg	His	Ile
1				5				10						15	
Asp	Leu	Leu	Lys	Gly											
					20										

(2) INFORMATION FOR SEQ ID NO: 34:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

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(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "A biotin group is attached to Ala of position 1."

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 21
- (D) OTHER INFORMATION: /note= "A NH₂ group is attached to Gly at position 21."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 34:

Ala	Ala	Arg	Asn	Ser	Ser	Ile	Pro	Thr	Thr	Thr	Ile	Arg	Arg	His	Val
1				5				10						15	
Asp Leu Leu Val Gly															
20															

(2) INFORMATION FOR SEQ ID NO: 35:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "A biotin group is attached to Ala of position 1."

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 21
- (D) OTHER INFORMATION: /note= "A NH₂ group is attached to Met at position 21."

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 35:

Ala Val Gln Gln Pro Gly Ala Leu Thr Gln Gly Leu Arg Thr His Ile
 1 5 10 15

Asp Met Val Val Met
 20

(2) INFORMATION FOR SEQ ID NO: 36:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "A biotin group is attached to Ala of position 1."

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 21
- (D) OTHER INFORMATION: /note= "A NH₂ group is attached to Met at position 21."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 36:

Ala Val Lys His Arg Gly Ala Leu Thr Arg Ser Leu Arg Thr His Val
 1 5 10 15

Asp Met Ile Val Met
 20

(2) INFORMATION FOR SEQ ID NO: 37:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

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(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 1

(D) OTHER INFORMATION: /note= "A biotin group is attached to Ser of position 1."

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 9

(D) OTHER INFORMATION: /note= "A NH₂ group is attached to Gln at position 9."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 37:

Ser Gln His Leu Pro Tyr Ile Glu Gln
1 5

(2) INFORMATION FOR SEQ ID NO: 38:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 9 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS:

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 1

(D) OTHER INFORMATION: /note= "A biotin group is attached to Ala of position 1."

(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 9

(D) OTHER INFORMATION: /note= "A NH₂ group is attached to Gln at position 9."

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 38:

Ala Ser His Leu Pro Tyr Ile Glu Gln
1 5

(2) INFORMATION FOR SEQ ID NO: 39:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "A biotin group is attached to Ala of position 1."

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 9
- (D) OTHER INFORMATION: /note= "A NH₂ group is attached to Glu at position 9."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 39:

Ala Ser Arg Ala Ala Leu Ile Glu Glu
1 5

(2) INFORMATION FOR SEQ ID NO: 40:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

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(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "A biotin group is attached to Ala of position 1."

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 9
- (D) OTHER INFORMATION: /note= "A NH₂ group is attached to Glu at position 9."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Ala Ser Lys Ala Ala Leu Ile Glu Glu
1 5

(2) INFORMATION FOR SEQ ID NO: 41:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "A biotin group is attached to Gln of position 1."

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 9
- (D) OTHER INFORMATION: /note= "A NH₂ group is attached to Thr at position 9."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Gln Lys Ala Leu Gly Leu Leu Gln Thr
1 5

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(2) INFORMATION FOR SEQ ID NO: 42:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "A biotin group is attached to Ser of position 1."

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 9
- (D) OTHER INFORMATION: /note= "A NH₂ group is attached to Gln at position 9."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Ser Lys Ile Gln Gly Leu Leu Gln Gln
1 5

(2) INFORMATION FOR SEQ ID NO: 43:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 15 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "A biotin group is attached to Ser of position 1."

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(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 15
- (D) OTHER INFORMATION: /note= "A NH₂ group is attached to Asp at position 15."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Ser	Arg	Arg	Phe	Ala	Gln	Ala	Leu	Pro	Val	Trp	Ala	Arg	Pro	Asp
1				5					10					15

(2) INFORMATION FOR SEQ ID NO: 44:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 15 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "A biotin group is attached to Pro of position 1."

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 15
- (D) OTHER INFORMATION: /note= "A NH₂ group is attached to Asp at position 15."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Pro	Arg	Lys	Phe	Pro	Pro	Ala	Leu	Pro	Ile	Trp	Ala	Arg	Pro	Asp
1				5					10					15

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(2) INFORMATION FOR SEQ ID NO: 45:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 15 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "A biotin group is attached to Lys of position 1."

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 15
- (D) OTHER INFORMATION: /note= "A NH₂ group is attached to Asp at position 15."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Lys	Lys	Arg	Phe	Pro	Pro	Ala	Leu	Pro	Ala	Trp	Ala	Arg	Pro	Asp
1				5				10					15	

(2) INFORMATION FOR SEQ ID NO: 46:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 15 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS:
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 1
- (D) OTHER INFORMATION: /note= "A biotin group is attached to Arg of position 1."

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(ix) FEATURE:

(A) NAME/KEY: Modified-site

(B) LOCATION: 15

(D) OTHER INFORMATION: /note= "A NH₂ group is attached to
Asp at position 15."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

Arg	Arg	Lys	Phe	Pro	Pro	Ala	Leu	Pro	Pro	Trp	Ala	Arg	Pro	Asp
1				5				10						15